

Figure 1

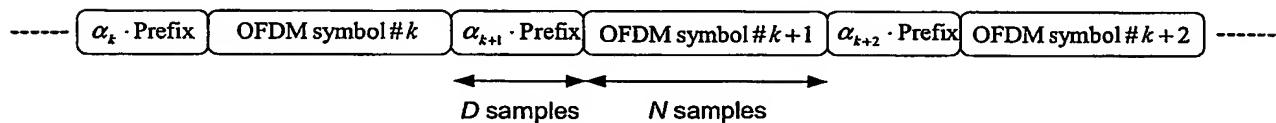


Figure 2

$$\begin{aligned}
 & h_{D-1} \quad h_1 \\
 & \begin{array}{|c|c|c|c|c|c|} \hline & & & & & H_1 \\ \hline & & & & & \\ \hline \end{array} \\
 & = [H_{IBI}] = \begin{pmatrix} 0 & \rightarrow & 0 & h_{D-1} & h_{D-2} & \rightarrow & h_1 \\ \downarrow & \searrow & \searrow & \searrow & h_{D-1} & \searrow & h_2 \\ \downarrow & \searrow & \searrow & \searrow & & \searrow & \downarrow \\ \downarrow & \searrow & \searrow & \searrow & & \searrow & h_{D-1} \\ \downarrow & \searrow & \searrow & \searrow & & \searrow & 0 \\ \downarrow & \searrow & \searrow & \searrow & & \searrow & \downarrow \\ 0 & \searrow & \searrow & \searrow & & \searrow & 0 \end{pmatrix}
 \end{aligned}$$

Figure 3

$$= [H_{ISI}] = \begin{pmatrix} h_0 & 0 & \rightarrow & \rightarrow & \rightarrow & \rightarrow & 0 \\ h_1 & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ \downarrow & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ h_{D-2} & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ h_{D-1} & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ 0 & \searrow & \searrow & \searrow & \searrow & \searrow & 0 \\ 0 & \searrow & \searrow & h_{D-1} & h_{D-2} & \rightarrow & h_0 \end{pmatrix}$$

Figure 4

$$= [H_{IBI}] + [H_{ISI}] = \begin{pmatrix} h_0 & 0 & \rightarrow & h_{D-1} & h_{D-2} & \rightarrow & h_1 \\ h_1 & \searrow & \searrow & \searrow & h_{D-1} & \searrow & h_2 \\ \downarrow & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ h_{D-2} & \searrow & \searrow & \searrow & \searrow & \searrow & h_{D-1} \\ h_{D-1} & \searrow & \searrow & \searrow & \searrow & \searrow & 0 \\ 0 & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ 0 & \searrow & \searrow & h_{D-1} & h_{D-2} & \rightarrow & h_0 \end{pmatrix}$$

Figure 5

$$\boxed{H} = \begin{pmatrix} h_0 & \rightarrow & h_2 & h_1 \\ h_1 & \searrow & h_3 & h_2 \\ \downarrow & \searrow & \searrow & \downarrow \\ h_{D-1} & \rightarrow & h_1 & h_0 \end{pmatrix}$$

Figure 6

$$\boxed{X_1} = \begin{pmatrix} 0 & h_{D-1} & \rightarrow & h_2 & h_1 \\ 0 & \searrow & \searrow & h_3 & h_2 \\ \downarrow & \searrow & \searrow & \searrow & \downarrow \\ \downarrow & \searrow & \searrow & \searrow & h_{D-1} \\ 0 & \searrow & \searrow & 0 & 0 \end{pmatrix}$$

Figure 7

$$\boxed{H_0} = \begin{pmatrix} h_0 & 0 & \rightarrow & \rightarrow & 0 \\ h_1 & h_0 & 0 & \nearrow & \downarrow \\ \downarrow & \searrow & \nearrow & \nearrow & \downarrow \\ \downarrow & \searrow & \nearrow & \nearrow & 0 \\ h_{D-1} & h_{D-2} & \rightarrow & \rightarrow & h_0 \end{pmatrix}$$

Figure 8

Figure 9

$$\begin{array}{c}
 \text{Input Matrix } H \\
 \begin{matrix} H_0 & & & H_1 \\ H_1 & H_0 & & \\ & H_2 & H_0 & \\ & & H_1 & H_0 \\ & & & H_0 \end{matrix} \\
 \times \quad \begin{matrix} x_4(k) \\ 0_D \\ 0_D \\ 0_D \end{matrix} = \begin{matrix} [H_0] \cdot x_4(k) \\ [H_1] \cdot x_4(k) \\ 0_D \\ 0_D \end{matrix}
 \end{array}$$

Figure 10

$$\begin{array}{c}
 \text{Stage 1: } \begin{matrix} H_{IBI} \\ x(k-1) \end{matrix} \\
 \text{Stage 2: } \begin{matrix} H_{ISI} \\ x(k) \end{matrix} \\
 \text{Stage 3: } \begin{matrix} H_{IBI} \\ x(k-1) \end{matrix} + \begin{matrix} H_{ISI} \\ x(k) \end{matrix} \times \begin{matrix} x_0(k) \\ x_1(k) \\ x_2(k) \\ x_3(k) \\ \alpha_{k+1} \cdot P_D \end{matrix}
 \end{array}$$

Figure 11

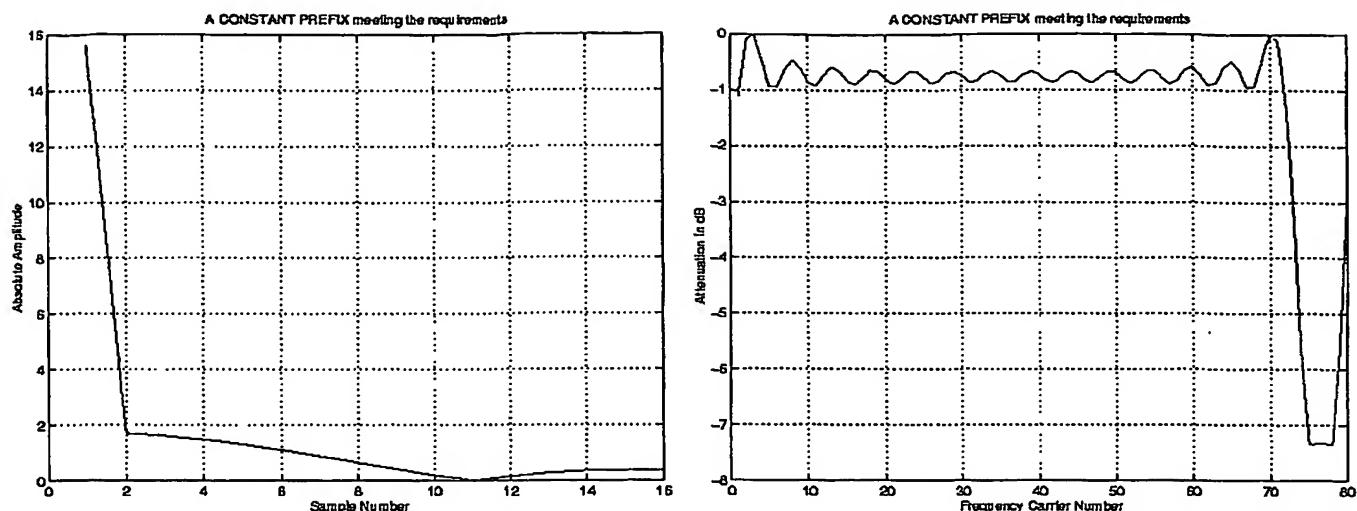


Figure 12